

Application No.: 10/076003

Case No.: 57181US002

Remarks

Claims 1 – 40 are pending. (Claims 39 and 40 were added in Applicants' communication filed on June 27, 2003; however, the Examiner did not acknowledge them in the Disposition of Claims section of the outstanding Office Action.) Claims 1 – 19 and 34 – 38 have been withdrawn from consideration.

Rejection Under 35 U.S.C. Section 102

Claim 20 has been rejected under Section 102(b) as being anticipated by U.S. Patent No. 5,937,272 (Tang). The rejection is traversed for the following reasons.

Tang discloses a method of forming organic electroluminescent (EL) displays comprising vapor depositing organic EL medium through an aperture mask. The vapor deposition step can include, for example, transferring by optical or direct thermal means the organic EL medium from a precoated donor sheet to bottom electrodes through apertures in the aperture mask (see, for example, claim 2), providing a pattern of absorbers and a layer of organic EL medium precoated on a mask support surface and selectively transferring the organic EL medium from the mask to the bottom electrodes (see, for example, claim 8), or forming a uniform heat insulating layer upon which is disposed a pattern of absorbers and a layer of organic EL medium on a mask support substrate and selectively transferring the organic EL medium from the mask to bottom electrodes (see, for example, claim 15).

Applicants' disclose an integrated circuit (IC) comprising a deposition substrate, a patterned first electrode layer formed adjacent the deposition substrate, a patterned organic semiconductor layer formed adjacent the first electrode layer, and a second patterned electrode layer deposited adjacent the organic semiconductor layer, wherein the patterned first electrode layer, the patterned organic semiconductor layer, and the second patterned electrode layer are each defined by a repositionable aperture mask.

The Examiner has asserted that Tang discloses a deposition substrate, a patterned first electrode layer adjacent the substrate, a patterned organic semiconductor layer, and a second patterned electrode layer, wherein the patterned layer is defined by a repositionable aperture mask.

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It appears, however, that Tang does not teach or suggest all of Applicant's claim limitations. Claim 20 requires that each layer (that is, the patterned first electrode layer, the patterned organic semiconductor layer, and the second patterned electrode layer) be defined by a repositionable aperture mask. Tang does not appear to teach or suggest a patterned first electrode layer defined by a repositionable aperture mask or a second patterned electrode layer defined by a repositionable aperture mask.

Furthermore, it does not appear that the technique for depositing organic EL medium disclosed in Tang would be practical for depositing electrode layers, which are typically metal. For example, according to Figure 1, it appears that Tang places a donor support (for example, metal, glass, or a flexible web) coated with organic EL medium between an aperture mask and a heating element. The aperture mask is in contact or in close proximity to the deposition substrate. The donor support is then heated so that the organic EL medium is transferred through the mask onto the deposition substrate. It would be very difficult to use this technique for depositing metals, which require much higher temperatures to vaporize. It would also be difficult to find an appropriate donor support material.

In addition, Tang, in effect, teaches away from using his aperture mask technique for patterning and depositing electrodes by having an aperture mask system, but not using it for electrodes.

In view of the foregoing, claim 20 is novel and patentable over Tang. Applicants therefore respectfully request that the rejection under Section 102(b) based on Tang be withdrawn.

Rejections Under 35 U.S.C. Section 103

Claims 21 – 22 and 25 – 33 have been rejected under Section 103(a) as being unpatentable over Tang in view of U.S. Patent No. 6,087,196 (Sturm). The rejection is traversed for the following reasons.

Sturm discloses a method of fabricating organic light emitting diodes (OLEDs) including applying electrodes by evaporation through shadow masks and ink-jet printing luminescent polymer films.

The Examiner has asserted that because Tang discloses the invention substantially as claimed and Sturm teaches a first electrode layer defining a gate electrode and a second electrode

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layer defining source/drain electrodes of a TFT, it would have been obvious for one skilled in the art to modify the invention of Tang as taught by Sturm.

First, as discussed above, Tang does not disclose the invention substantially as claimed. Furthermore, neither Tang nor Sturm teach or suggest patterning multiple IC layers using repositionable aperture masks. Tang only appears to disclose patterning organic EL medium for EL displays. Sturm only appears to disclose patterning source/drain electrodes for OLEDs.

ICs have a complicated structure. Although ICs typically cover a large area, small feature sizes and precision are required within the IC. Alignment of IC layers is therefore crucial. It would not have been obvious to one of skill in the art that multiple patterned layers could be properly aligned using aperture masks. Sturm states, for example, at column 4, lines 53 – 59, “It was difficult to fabricate devices directly on top of the polymer dots fabricated by ink-jet printing because of the difficulty in aligning a shadow mask for metal cathode formation directly over a polymer dot. Therefore to fabricate test devices the ink-jet printer was operated in a mode to create a continuous sheet of polymer rather than discrete dots.” Sturm also notes that it is difficult to extend aperture mask techniques to large areas (see, for example, column 1, lines 58 – 60).

In view of the foregoing, claims 21 – 22 and 25 – 33 are unobvious and patentable over the combined references. Applicants therefore respectfully request that that the rejection under Section 103(a) based on Tang in view of Sturm be withdrawn.

Claims 23 and 24 have been rejected under Section 103(a) as being unpatentable over Tang. The rejection is traversed for the following reasons.

The Examiner has asserted that it would have been obvious to one skilled in the art to modify the gap between the source/drain electrodes of Tang with the specific range claimed.

The Examiner has failed, however, to establish a prima facie case of obviousness. According to MPEP Section 2143, a criterion for establishing a prime facie case of obviousness is that “the prior art reference . . . must teach or suggest all the claim limitations.” As discussed above, it appears that Tang does not teach or suggest all of Applicant’s claim limitations. Specifically, Tang does not appear to teach or suggest a patterned first electrode layer defined by a repositionable aperture mask or a second patterned electrode layer defined by a repositionable aperture mask.

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In addition, while it may have been obvious to one of skill in the art that the dimensions of the gap between the source and drain electrodes recited in claims 23 and 24 are desirable, it would not have been obvious that the dimensions could be obtained using repositionable aperture masks. Therefore, claims 23 and 24 are unobvious and patentable over Tang, and Applicants respectfully request that the rejection under Section 103(a) based on Tang be withdrawn.

Concluding Remarks

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is respectfully requested.

Respectfully submitted,

Sept. 1, 2004
Date

By: Lisa P. Fulton
Lisa P. Fulton, Reg. No.: 55,195
Telephone No.: (651) 733-1260

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833